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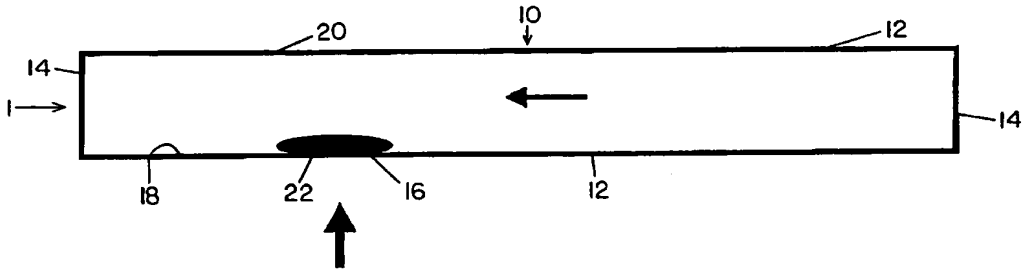
(54) Title: HIGH THROUGHPUT ASSAY SYSTEM



(57) Abstract: A device and a method that permits rapid application of experimental solutions to both (i.e. intracellular and extracellular) surfaces of a membrane patch is described. In one embodiment, this is accomplished by mounting a membrane patch on a hole through the side of a hollow tube such that one surface can be readily perfused on the outside of the tube while simultaneously perfusing the inside of the tube. Thus, by measuring changes in membrane traffic using any of a variety of means known in the art, it is possible to determine the effect of test compounds presented to the intracellular and/or extracellular surface on membrane traffic. As can be seen, the instant device and method have the advantage of allowing both sides of the membrane to be accessed simultaneously, as described below. This is in contrast to existing patch clamp techniques where only a single membrane surface is readily accessible

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